ANNUAL REPORT

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INSULAR EXPERIMENT STATION

OF THE

DEPARTMENT OF AGRICULTURE AND LABOR

OF

PORTO RICO

FOR THE PERIOD FROM JULY 1, 1917

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REPORT OF THE DIVISION OF PLANT PATHOLOGY AND BOTANY.

By JOHN A. STEVENSON.

INTRODUCTION.

The work of the division of plant pathology and botany for the year has been somewhat modified from the original plans due to exigencies created by the war and other circumstances. It was found necessary to close, at least for the time being, a considerable number of projects, and the time available has been given to a large extent to the preparation of manuscript for publication. Field work has been for the most part limited to observational studies on the mottling disease of cane, or to trips of inspection to cooperative experiments in the same connection.

Enlarged quarters have been furnished for the laboratories and office of the division, and provided it is possible to secure the desired assistants, it should be possible to make very satisfactory progress in the coming year on the various projects already outlined.

WORK OF THE YEAR.

The most pressing problem under investigation has been that of the mottling disease of cane and it will, apparently, continue to be. The plant house has been devoted almost in its entirety to pot experiments with this disease. A number of outdoor experiments were also carried on until it became evident that such a procedure was dangerous, in that the disease was spreading from these centers, since which time such experiments have been confined to the plant house. Notes have been taken on the occurrence and spread of the disease in this locality, all diseased stools being removed as soon as located, the work thus serving as an eradication test. Notes have likewise been taken on a number of field trips as to the occurrence of the disease, varieties attacked, relative resistance, and related data. This information will be found in a detailed report to be published in the Journal of Agriculture.

The task of working over the accumulated data and putting in shape for publication the paper on sugar-cane fungi and diseases

consumed considerable time, as did the preparation of the other papers listed hereafter.

One of the important accomplishments of the year was the preparation of a check-list of Porto Rican fungi and host index, which included all available information on the subject. This will serve as a basis for future work along mycological and pathological lines.

Time was taken to prepare a fairly complete paper on the citrus diseases of the Island and methods for their control. It was realized that much of the data at hand was fragmentary, but it was thought that the presentation of what information was available would serve a useful purpose at this time.

The Porto Rico Fruit Exchange took up the problem of preparation of by-products from cull fruit, particularly the possibility of putting out satisfactory fruit juices. The Bureau of Chemistry of the United States Department of Agriculture cooperated with the Exchange in this work, and a local laboratory was set up. As the work progressed considerable difficulty was experienced with fermentation. Representative samples were referred to this division and extensive studies were made on the problem. One and probably two types of yeast were isolated as the trouble makers and certain tests made with them.

Mr. R. C. Rose, assistant pathologist, entered the first Officer's Training Camp in August, which necessitated the closing of work on a number of vegetable-disease projects. It is hoped that it will soon be possible to again take up certain of these, since fungus or bacterial diseases are in the case of several of the important vegetables the limiting factors in their culture.

In April Mr. Bernardo López, formerly of the Federal Experiment Station, took up work as assistant pathologist. He has taken over the cultural work, and has given considerable time to the making of translations for the *Revista*, and to other matters of laboratory routine.

An exhibit of cane diseases, including both photographs and actual specimens, was prepared for the agricultural conference held in Mayagüez, March 19–21. A short talk on the mottling disease of cane was also made on the same occasion. The exhibit has been transferred to the San Juan Office of the Department of Agriculture for permanent exhibition, together with a very large number of other mounted photographs from the collection of the division.

The work of the year has been covered in detail in the written reports submitted monthly.

PUBLICATIONS.

Circumstances having made it advisable, the bulk of the available time of the year has been given to the preparation of a number of papers, published both locally and in the States. These have included not only the usual press notices of a popular nature, but a number of technichal papers as well. A list follows:

Report of the department of pathology and botany.—*In* Annual Report of the Insular Experiment Station, for the year 1916–17, pp. 37–98.

Wood rot of citrus trees.—Circular, no. 10, Insular Experiment Station.

"Wood rot" or "Podredumbre de la madera de los cítricos."—Spanish edition of the above.

La nueva enfermedad de la caña.—Circular, no. 11, Insular Experiment Station. Spanish edition only.

Lightning injury to sugar-cane.—*In* Phytopathology, vol. 7, no. 4, Aug. 1917, pp. 317–318, fig. 1.

Cane diseases in Porto Rico.—In Louisiana Planter, vol. 64, no. 5, Aug. 4, 1917, pp. 76–78.

Enfermedad de la caña en Puerto Rico.—*In* "El Mundo Azucarero," vol. 5, no. 1, Aug. 1917, pp. 19–24, fig. 10.

The preparation and use of lime-sulphur.—Circular 13, Insular Experiment Station. As the senior writer.

Citrus scab in Porto Rico.—Bulletin 17, Insular Experiment Station.

Sugar-cane fungi and diseases of Porto Rico.—In Journ. of the Dept. of Agric. of P. R., vol. 1, no. 4, Oct. 1917, pp. 177–251, 13 plates. As the junior author.

An epiphytotic cane disease in Porto Rico.—*In* Phytopathology, vol. 1, no. 6, Dec. 1917, pp. 418–425, 2 figs. Reprinted *in* The Hawaiian Planter's Monthly, vol. 18, no. 4, April 1918, pp. 359–367.

Diseases of sugar cane in tropical and sub-tropical America, especially in the West Indies.—*In* West India Bulletin, vol. 16, no, 4, pp. 275–308.

In collaboration with other pathologists of the West Indies notes were prepared for this paper, which was in the main the work of Mr. John R. Johnston, formerly pathologist of this Station, and now Chief of the "Comisión de Sanidad Vegetal" de Cuba.

The green muscardine fungus in Porto Rico.—*In* Journ. Dept. of Agric. of P. R., vol. 2, no. 1, Jan. 1918, pp. 19–32, 1 pl.

The citrus diseases of Porto Rico.—*In* Journ. Dept. of Agric. of P. R., vol. 2, No. 2, April 1918, pp. 43–122, 23 figs.

La enfermedad nueva de la caña.—*In* "Revista de Agricultura de Puerto Rico," vol. 1, no. 1–2, April 1918, pp. 18–25, 2 figs.

Una yerba peligrosa: yerba de Don Carlos o cañuela.—*In* "Revista de Agricultura de Puerto Rico," vol. 1, no. 3, junio, 1918, 2 figs.

A check list of Porto Rican fungi and a host index.—*In* Journ. Dept. of Agric. of P. R., vol. 2, no. 3, July, 1918.

PRESS NOTICES.

Abonos y la enfermedad del matizado de la caña.
La enfermedad nueva de la caña y la yerba malojillo.
The mosaic disease of tobacco.
Sobre la flora de Puerto Rico.
Sobre la enfermedad del matizado de la caña.
Puntos en la enfermedad de la caña.
Medios para combatir el matizado de la caña.
The Experiment Station and the mottling disease of cane.
La cuarentena de las plantas.
La cuarentena de las plantas en Puerto Rico.
A catalogue of the fungus and non-parasitic diseases attacking the economic plants of Porto Rico.

PLANT DISEASE SURVEY.

The work along this line has not been as extensive as in previous years, since so much less field work has been undertaken, but information obtained by correspondence has in part made up for this lack. In accordance with the plan of cooperation with the Plant Disease Survey of the United States Department of Agriculture the pathologist has continued as collaborator, and the annual report on diseases observed has been made to Washington.

It has been found somewhat difficult to interest the agriculturists of the Island in the use of the franked tags and envelopes supplied for the purpose of sending in specimens of diseased material, or for making inquiries in the same connection. These have been distributed as occasion arose, as for instance at the Mayagüez conference, and have been sent to individuals whom it was thought could supply information, but results have not been satisfactory. It is hoped that the plan to have the directions on the tags in Spanish hereafter will aid in obtaining information.

HERBARIUM.

Lack of space, due to the impossibility of obtaining additional insect-proof steel cases of the type required for safe and satisfactory storage of specimens, has seriously handicapped work in this direction. Practically no additions were made to the flowering plant collection, attention having been concentrated on the fungi. An effort was made in connection with the check list to work up as many as possible of the unnamed collections in the herbarium. Large numbers of specimens were sent north to specialists, and information received was incorporated in the check list.

Attention has also been given to the preparation of duplicate packets of named fungi for exchange purposes with other institutions. Some time was given to working over portions of the fungus herbarium of the College of Agriculture, following Dr. F. L. Steven's lists.

A summary of additions to the herbarium during the year follows (not including collections as yet undetermined):

Fungi:	
Station collections	540
Exchange specimens, Porto Rican	289
Exchange specimens, not Porto Rican	151
Flowering plants and mosses:	
Station collections	103
Total specimens	1,083

EDITORIAL.

As in previous years editorial duties have consumed no little time. Four numbers of the Journal of the Department of Agriculture have been issued and one is in press, thus completing the first volume, and making satisfactory progress with the second. Beginning with number one of the second volume an improved form was adopted, which it is thought will add considerably to the appearance and value of the publication. It will continue to be issued quarterly as heretofore with the technical writings of staff members as subject matter.

In order to provide adequately for the presentation of available agricultural information in popular form a further periodical publication has been established by the Department of Agriculture to be known as the "Revista de Agricultura de Puerto Rico." Definite plans have not yet been made concerning it, but it is hoped to publish monthly, in Spanish, and to include not only articles from members of the staff, but from all others interested. A preliminary double number was prepared from the material presented at the Agricultural Conference at Mayagüez, and a third, containing for the most part articles by members of the Station staff, has recently been sent to press.

In addition to time given to these two publications the report of the Station for 1916–17, circulars 10–13, and bulletin 17 have been edited, prepared for press, and proof-read during the course of publication.

MINOR DISEASES AND NOTES.

Although the majority of the activities of the division for the year have been covered in the publications listed above, a few notes, for the most part relating to studies of diseases attacking certain vegetable crops carried on by Mr. Rose, remain and can best be recorded at this point. A complete report on the mottling disease of cane, to include the results of all studies, experiments, and observations to date is being prepared for publication in the Journal of the Department of Agriculture of Porto Rico.

Leaf-spot of turnip (*Colletotrichum Higginscanum* Sacc.).

This recently described leaf spot (Jour. of Agric. Research, Vol. 10, No. 4.) was found by Mr. Rose on a planting of turnips at the Station. The spots are numerous, subcircular, ashen-gray in color with a definite purple margin, and from three to eight millimetres in diameter. It is of slight economic importance as far as noted in Porto Rico to date.

Downy-mildew of cucumber (*Peronoplasmopora cubensis* [B. & C.] Clinton).

This disease continues to be a most serious obstacle to successful cucumber culture, and a further attempt was made to combat it. Cucumbers of a standard variety were grown on trellises to permit of thorough application of the spray materials. It was also thought that a system of supports might in itself prove of value by keeping the vines off the ground, and so avoid an overhumid condition, favorable for fungus growth. Sulfocide, a proprietary compound, and Bordeaux mixture (standard 4-4-50 formula) were used, being twice a week from the time the plants were six inches high until maturity. Eleven applications in all were given. The disease appeared about a month after spraying was commenced, rapidly killed all check plants, and attacked even the sprayed ones to a serious extent. Sulfocide-treated plants fared little better than the checks, the yields being practically the same. Plants in the Bordeaux plot gave a yield considerably greater than the checks, but it was not apparent that the increased yield was sufficient to pay for the labor and materials involved in spraying.

Sweet potato rots.

Reports have often been received of losses sustained by rots of

sweet potato, particularly while in storage but until recently efforts to obtain specimens were unsuccessful. Most specimens submitted proved to be attacked by the sweet potato weevil (*Cylas formicarius*). From one lot, however, it was finally possible to isolate two fungi, well known as rot-producing agents of the sweet potato. These were *Sclerotium bataticola* producing the so-called charcoal rot, and *Diplodia tubericola* the cause of Java black-rot. The rot in the specimens examined was in each case typical as described by Taubenhaus and other writers on sweet potato diseases. It is impossible to say, due to lack of information, how serious these rots are, or whether they will become threatening. It is probable that these fungi need not be feared, since the crop is one that is used locally and without any prolonged storage periods.

As minor fungi-producing rot of the same host, *Rhizopus nigricans* and *Schizophyllum commune* have been noted.

Leaf blight of okra (*Cercospora hibisci* T. & Earle).

Okra in Porto Rico is commonly subject to this disease which cause defoliation and consequent poor yields. The disease is first noted as isolated black sooty patches on the under surfaces of the lower leaves. These patches soon coalesce, the affected leaf turning yellow and dropping. The final result is a tall stem, bare of leaves except at the tip, and of course a very small yield. Bordeaux mixture (4-4-50) was tried, applications being made weekly, but with only partial success in checking the disease.

Blossom blight of okra (*Choanephora cucurbitarum* [B. & Rav.] Thaxt.).

This disease was noted for the first time by Mr. Rose in the Station plots attacking the blossoms of the okra. The flower parts are soft rotted and in a certain percentage of cases the newly formed fruit is also infected and subsequently destroyed. A black mold of the familiar bread-mold type is produced on diseased blossoms. The disease was especially prevalent during wet weather. Later in the season blossoms and young fruit of a variety of crook-neck squash were attacked in similar manner. Bordeaux mixture proved only partially successful in controlling the disease.

Leaf disease of chayote.

This important tropical vegetable crop is very subject to leaf disease, to such an extent in fact, that it is often impossible to grow

the plants successfully. Spraying with Bordeaux mixture has not given satisfactory results in so far as observations have been made, nor do other published records report any success in this direction.

In a previous publication [1] mention was made of this disease without a definite determination of the casual fungus being made. Additional collections since that time have permitted more detailed studies, so that it is now possible to distinguish at least two types of leaf spot, due to two fungi, neither of which has apparently been before described. Of these diseases the one due to *Cercospora* is much the more common and destructive, being almost universally present wherever the host occurs. It may be said to be one of the limiting factors of chayote production.

The two fungi producing these leaf diseases may be technically described as follows:

Cercospora sechii sp. nov.

Spots yellow, subcircular at first, soon very irregular and indefinite, coalescing and spreading, so as to rapidly cover the entire leaf surface. Sometimes confined to irregular brown spots up to one centimeter in diameter. Fruiting amphigenous, fascicles few to many; conidiophores few to many, erect, brown, septate, nodose, 5–6 × 100–150 mu.; conidia hyaline, curved, long clavate, tapering, septate below, sparingly above, not intented at septations, 3–4 × 60–270 mu.

On *Sechium edule*, Barceloneta, 6462; Río Piedras, 6888.

Helminthosporium sechiicolum sp. nov.

Spots amphigenous, angular, up to 10 mm. in diameter, dull brown above, lighter below, older spots approaching white at the center, with definite margins, numerous, often coalescing. Conidiophores brown, sparingly septate, non-nodose, sometimes constricted at septate, 6–7 × 150–300 mu. Conidia typical of the genus, brown, thick walled, slightly curved, many septate, 15–20 × 80–150 mu.

On *Sechium edule*, Pueblo Viejo, 5169; Canuy, 5939.

The spotting due to the latter species is readily distinguished from that due to the former by the definite brown spots, in contrast to the large irregular and very indefinite yellow areas of the *Cercospora*.

The Cercospora leaf spot of pea.

This leaf spot has been under observation for several seasons, occurring more or less constantly on the various experimental pea

[1] Diseases of Vegetable and Garden Crops. In *Jour. Dept. of Agriculture of P. R.*, Vol. 1, No. 2, p. 99.

plantings made, and while of no economic importance, it has been thought worth while to record it. No other reports of a fungus of this description on the pea have been found, and hence it is here given as new.

Cercospora pisa-sativae su. nov.

Spots amphigenous, appearing the same on both surfaces, medium brown in color at first, finallly changing to dirty white or tan, with definite dark brown slightly raised margins, circular to somewhat angular, one to four millimeters in diameter. Diseased tissue sharply cut off from normal leaf areas. Spots few, two to ten per leaflet on the average, on older leaves sometimes coalescing to form irregular brown areas. Fruiting on both surfaces, but more freely on the lower, few to many fascicles. Conidiophores brown below, hyaline above, strongly septate (8–12), 5–6 × 100–170 mu. Conidia hyaline, long clavate, becoming attenuate, obscurely 4–many septate, not indented at septations, 3–4 × 50–240 mu., average 130 mu.

On *Pisum sativum*, Río Piedras, 6258, 6777, 6887.

The gray Sclerotium of cane.

A number of collections have been made over a period of years and on several hosts of an interesting gray *Sclerotium*. This is the species referred to as *Sclerotium* sp., pages 227 and 235, Sugar Cane Fungi and Diseases of Porto Rico, in the Journal of the Department of Agriculture of P. R., vol. 1, no. 4, Oct. 1917.

This form occurs on dead and dying leaves and in the case of the cane, on the moribund leaf-sheaths where it doubtless aids somewhat in bringing about death of the leaves. The affected areas are brown with definite red-brown margins. A search not having revealed any previous description of this fungus, it is named and described as follows.

Sclerotium griseum sp. nov.

Sclerotia superficial; uniformly light gray in color, subglobose to hemispheric or even much flattened (pulvinate); 5 to 2 mm. in diameter, at times coalescing to form irregular masses up to 5 mm. in diameter, but ordinarily few and scattered; surface smooth. Internal cells hyaline, thick walled, angular. Occurring on dead and dying leaves and leaf-sheaths.

On *Musa paradisiaca*, Río Piedras, 6480.

Saccharum officinarum, Río Piedras, 4312 (Johnston), 6471; Las Monjas, 4044 (Johnston); Hormigueros 4070.

Also collected at La Romana, Santo Domingo by Johnston, 4831, 4826.

Zea mays, Río Piedras, 6629.

DISEASES OF THE YEAR.

The following is a list of the plant diseases observed or reported during the year, together with notes as to occurrence:

Beans (*Phaseolus vulgaris*).

Bacteriosis (*Bacterium phaseoli* Er. Sm.). Common, the most serious bean disease noted for the year.

Crown rot (*Sclerotium Rolfsii* Sacc.). Several reports.

Downy mildew (*Phytophthora terrestria* Sherb.). One report.

Gray leaf spot (*Isariopsis griseola* Sacc.). Widespread, especially serious as a cause of defoliation and pod spotting of certain varieties.

Leaf spot (*Cercospora* sp.). Occasional.

Powdery mildew (*Erysiphe polygoni* De.). Common on mature plants, but causing little harm.

Rust (*Uromyces appendiculatus* [P.] Lk.). Common, but damage negligible.

Beet (*Beta vulgaris*).

Leaf spot (*Cercospora beticola* Sacc.). Common, not serious.

Bermuda grass (*Capriola dactylon*).

Rust (*Puccinia cynodontis* De Lac). Several collections.

Breadfruit (*Artocarpus incisa*).

Rust (*Uredo artocarpi* Arthur). One report.

Brown-eyed bean (*Dolichos lablab*).

Rust (*Physopella concors* Arthur). Common.

Carrot (*Daucus carota*).

Rot (*Sclerotium Rolfsii* Sacc.). One case.

Cassava (*Manihot utilissima*).

Leaf spot (*Cercospora henningsii* Allesch.). Common, but damage negligible.

Celery (*Apium graveolens*).

Leaf spot (*Phyllosticta* sp.). One report, where soil conditions were unfavorable for satisfactory growth of the host.

Soft rot (*Bacillus* sp. [?]). As for leaf-spot.

CHAYOTE (*Sechium edule*).

Leaf spot (*Cercospora sechii* Stevenson). Very common and serious.

CHINESE CABBAGE (*Brassica Pe Tsae*).

Leaf spot (*Cercospora bloxami* Berk & Br.). Common.

Soft rot (*Bacillus* sp. [?]). One report.

CHINESE MUSTARD (*Brassica juncea*).

Leaf spot (*Cercospora bloxami* Berk & Br.). Common.

CORN (*Zea mays*).

Leaf spot (*Helminthosporium turcinum* Pass.). Common.

Root disease (*Himantia stellifera* Johnston). One report.

Rust (*Uredo pallida* Diet. & Holw.). Common, but of no importance.

Smut (*Ustilago zea* [Beckm.] Ung.). As isolated cases.

Tar spot (*Phyllachora maydis* Maub.). Common, but not a serious disease.

COROZO PALM (*Acrocomia media*).

Leaf spot (*Cercospora acromiæ* Stevenson). Two cases.

COWPEA (*Vigna unguiculata*).

Leaf spot (*Cercospora spp.*). Common, at times causing serious defoliation.

Slime mold (*Physarum cinereum* [Batsch.] Pers.). One report, fruiting on living plants.

CUCUMBER (*Cucumis sativus*).

Downy mildew (*Peronoplasmopora cubensis* [B. & C.] Clint). Common and destructive.

DATE (*Phœnix dactylifera*).

Leaf smut (*Graphiola phœnicis* [Moring.] Por't). Common.

DRACÆNA (*Cordyline terminalis*).

Leaf spot (*Phyllosticta maculicola*). Common, especially on certain varieties.

EGG-PLANT *Solanum melongena*).

Crown rot (*Sclerotium Rolfsii* Sacc.). Common, at times serious.

Fruit rot (*Phomopsis vexans* [Sacc & Syd.] Harter). Less severe than in the preceding year.

Stem cankers, leaf spot (*P. vexans*). As for fruit rot.

Wilt (*Bacterium solanacearum* Er. Sm.). The most severe egg-plant disease of the year.

Gandul (*Cajanus indicus*).

Leaf spot (*Cercospora cajani* P. Henn.). Common.

Pink disease (*Corticium salmonicolor* B. & Br.). One report.

Grape (*Vitis* sp.).

Sunscorch. One report.

Grapefruit (*Citrus decumana*).

Anthracnose, leaf spotting, wither-tip (*Colletotrichum glœosporioides* Penz.). Common in all forms, but no serious outbreaks reported.

Foot rot (?). Still prevalent in a few groves.

Frenching (?). Has been very prevalent.

Fruit rot (*Diplodia natalensis* Evans). The cause of heavy losses as in previous years.

Melanose (*Phomopsis citri* Faw.). Known to occur in two groves

Pink disease (*Corticium salmonicolor* B. & Br.). One report.

Scab (*Cladosporium* (?) *citri* Mass.). Continues to cause heavy losses.

Lettuce (*Lactuca sativa*).

Leaf-spot (*Cercospora lactucæ* Stevenson.). One report.

Lima beans (*Phaseolus lunatus*).

Gray leaf spot (*Isariopsis griseola* Sacc.). One report.

Leaf spot (*Cercospora canescens* Ell. & Mart.). Common.

Powdery milldew (*Erysiphe polygoni* Dc. [?]). One report.

Mango (*Mangifera indica*).

Blossom blight, anthracnose (*Colletotrichum glœosporioides* Penz.). Less serious than in previous years.

Leaf spot (*Pestalozzia guepinia* Desm.). Common.

Muskmelon (*Cucumis melo*).

Gray blotch (*Mycosphærella citrullina* [C. O. Sm.] Gross). One report.

Okra (*Hibiscus esculentus*).

Blossom blight (*Choanephora cucurbitarum* [B. & Raw.] Thax.). One report.

Leaf blight (*Cercospora hibisci Earle*). Common and destructive.

ORANGE (*Citrus sinensis*).

See also grapefruit.

Blossom end rot (*Fusarium* sp.). Less prevalent than usual.

Fruit rot (*Diplodia natalensis, Penicillium* spp.). Causing serious losses during time of shipping.

Scaly bark (Cause unknown). Several causes under observation.

PAPAYA (*Carica papaya*).

Leaf spot (*Pucciniopsis carica* Earle.). Common.

PEA (*Pisum sativum*).

Leaf spot (*Cercospora pisa-sativæ* Stevenson). Common, but of no importance.

PEANUT (*Arachis hypagea*).

Leaf spot (*Cercospora personata* [G. & C.] E.). Common.

Rust (*Uredo arachidis* Lagerh). Common.

PEPPER (*Capsicum annuum*).

Anthracnose (*Glæosporium piperatum* Ell. & Ev.). One report.

Leaf spot (*Cercospora capsici* H. & W.). Very common, causing defoliation at times.

PINEAPPLES (*Ananas sativus*).

Rot (*Thielaviopsis paradoxa* [De Seynes] V. Höhn). Very serious, causing very heavy losses during the marketing of the fruit.

POTATO (*Solanum tuberosum*).

Early blight (*Alternaria solani* [E. & M.] J. & G.). One collection.

Late blight (*Phytophthora infestans* De By.). One report.

RICE (*Oryza sativa*).

Blast (*Piricularia grisea* [Cke.] Sacc.). Two reports.

Leaf spot (*Cercospora oryzæ* Miy.). One report.

Rust (*Physiological*). Common, but not serious.

ROSE (*Rosa* spp.).

Gall (Cause undetermined). One report.

Leaf spot (*Cercospora rosicola* Pass). Common.

Leaf spot (*Septoria rosæ* Desm.) Several reports.

Powdery milldew (*Sphærotheca humuli* [D. C.] Burr.). One report.

SESAME (*Sesamum orientale*).

Leaf spot (*Cercospora sesami* Zimm.). Several reports.

SORGHUM (*Holcus sorghum*).

Rust (*Puccinia purpurea* Cooke). Common.

SQUASH (*Cucurbita moschata*).

Blossom blight (*Choanephora cucurbitarum* [B. & Rav.] Thaxt.). One report.

Downy mildew (*Peronoplasmopora cubensis* [B. & C.] Clint.). One report.

STRAWBERRY (*Fragaria* sp.).

Leaf spot (*Mycosphærella fragariæ* [Tul.]. Lin.). One report.

SUGAR CANE (*Saccharum officinarum*).

Leaf spot (*Helminthosporium sacchari* Butler). Has become very common in many sections of the Island, and causes some loss in yield particularly during periods of dry weather. Certain varieties are much more susceptible than others.

Leaf spot (*Leptosphæria sacchari* Van B. de H.). Continues to be common in all sections of the Island, on certain varieties.

Mottling (Cause unknown). Has spread to practically all parts of the Island, and continues to be epidemic in nature, occasioning heavy losses.

Pineapple disease (*Thielaviopsis paradoxa* [De Seynes] v. Hohn). Much less common than usual.

Red spot of the leaf sheath (*Cercospora vaginæ* Krüger). Very common everywhere, particularly on the Rayada or striped variety.

Red rot (*Colletotrichum falcatum* Went). Rare, and apparently never more than isolated stalks attacked.

Root disease (*Marasmius, Himantia*, etc.). A common trouble in all sections, causing losses second only to that due to mottling.

SWEET POTATO (*Ipomoea batatis*).

Charcoal rot (*Sclerotium bataticola* Taub.). One report.

Dry rot (*Schizophyllum commune* Fries.). One report.

Rot (*Diplodia tubericola* [E. & E.] Taub.). One report.

White rust (*Albugo ipomoeæ-pandurana* [Schwein.] Swing.). Common.

SWORD BEAN (*Canavalia* spp.).

Rust (*Cerotelium canavaliæ* Arthur). Common.

TOBACCO (*Nicotianam tabacum*).

Damping off (*Fusarium* sp. and other fungi). Common.
Leaf spot (*Cercospora nicotianæ* E. & E.). Common.
Mosaic (?) Has been serious in small plantings.

TOMATO (*Lycopersicum esculentum*).

Buck-eye-rot (*Phytophthora terrestria* Sherb.). One report.
Leaf mold (*Cladosporium fulvum* Cke.). Not serious.
Leaf spot (*Septoria lycopersici* Speg.). Common, but not serious this year as far as noted.
Wilt (*Bacterium solanacearum* Er. & Sm.). The most serious tomato disease.

TURNIP (*Brassica rapæ*).

Leaf spot (*Colletrotrichum Higginsianum* Sacc.). One report.

VELVET BEAN (*Stizolobium* sp.).

Leaf spot (*Cercospora mucunæ* Syd.).

YAUTÍA (*Colocasia* sp.).

El Mal (?) One report. A serious vascular disease as yet unstudied.

ZINNIA (*Crassina elegans*).

Leaf spot (*Cercospora atricincta* H. & W.). One report.